Listing of the Claims:

The following is a complete listing of all the claims in the application, with an indication of the status of each:

1   1 (Currently Amended). An image editing apparatus which edits image
2   data which has been coded in accordance with an image coding method, ~~by~~
3   ~~which~~ wherein a plurality of image frames constituting the image data are
4   divided into groups in order to manage the plurality of image frames by the
5   unit of each group, each image frame is coded into one of a first type
6   image frame which is created by coding based only on data enclosed in the
7   image frame itself, a second type image frame which is created by
8   performing inter-frame mono-directional prediction based on a past image
9   frame and coding a difference obtained by the prediction, and a third type
10   image frame which is created by performing inter-frame dual-directional
11   prediction based on a past image frame and a future image frame and
12   coding differences obtained by the prediction, and the plurality of image
13   frames are coded so that a head frame of each group may be the first type
14   image frame, said apparatus comprising:
15   an image corder which codes each of frames of image data into one
16   of the first type image frame, the second type image frame, and the third
17   type image frame by coding according to said image coding method;
18   an image decoder which decodes the image frame coded by said
19   image coder by decoding; and
20   an image data analyzer which <u>analyzes a picture header of a head</u>
21   <u>frame in the area to be edited and</u> determines an attribute of each group,
22   and types of image frames included in each group,
23   wherein: said image data analyzer determines whether or not a head
24   group which is arranged at a head of an editing target area included in the
25   image data coded by said image coding method is a closed group which is
26   a group that does not include the third type image frame which is to be

27   decoded by referring to an image frame included in a group which is

28   arranged before the head group; and

29   in a case where said image data analyzer determines that the head

30   group is not the closed group, said image coder converts a portion near the

31   head of the editing target area into the closed group.

1   2 (Original).   The image editing apparatus according to claim 1, wherein

2   said image data analyzer determines whether or not the third type image

3   frame included in the head group is an image frame which is to be decoded

4   by referring to an image frame included in a group which is arranged

5   before the head group.

1   3 (Original).   The image editing apparatus according to claim 2, wherein:

2   in a case where said image data analyzer determines that the third

3   type image frame is an image frame which is to be decoded by referring to

4   an image frame included in the group arranged before the head group, the

5   image decoder decodes the third type image frame; and

6   said image coder codes the third type image frame which is

7   determined by said image data analyzer as an image frame to be decoded

8   by referring to an image frame included in the group arranged before the

9   head group, and is decoded by said image decoder, into an image frame

10   which is able to be decoded without referring to an image frame included

11   in the group arranged before the head group.

1   4 (Original).   The image editing apparatus according to claim 1, wherein:

2   said image coding method is an MPEG method;

3   each of the groups is a GOP of MPEG;

4   the first type image frame is an I picture;

5   the second type image frame is a P picture; and

6   the third type image frame is a B picture.

1   5 (Currently Amended). An image editing apparatus which edits image

2   data which has been coded in accordance with an MPEG method, said

3   apparatus comprising:

4   image data analyzing means for analyzing <u>a picture header of a</u>

5   <u>head frame in the area to be edited and</u> a structure of image frames

6   included in each GOP of the image data, and determining an attribute of

7   each GOP and picture types of image frames included in each GOP;

8   conversion point detecting means for detecting a GOP which needs

9   to be re-coded from an editing target area of the image data, and an image

10   frame which needs to be re-coded from the detected GOP;

11   image decoding means for decoding the image frame which needs

12   to be re-coded detected by said conversion point detecting means by

13   decoding;

14   GOP converting means for creating a new GOP by re-coding the

15   image frame decoded by said image expanding means; and

16   image data concatenating means for concatenating a plurality of

17   image data which are cut out as editing target areas,

18   wherein: said image data analyzing means determines whether or

19   not a head GOP which is arranged at a head of the editing target area is a

20   closed GOP; and

21   in a case where said image data analyzing means determines that

22   the head GOP of the editing target area is not a closed GOP, said GOP

23   converting means converts a portion near the head of the editing target area

24   into a closed GOP.

1   6 (Currently Amended). An image editing apparatus which edits image

2   data which has been coded in accordance with by an image coding method,

3   wherein ~~by which~~ a plurality of image frames constituting the image data

4   are divided into groups in order to manage the image data by the unit of

5   each group, each image frame is coded into one of a first type image frame

6   which is created by coding based only on data enclosed in the image frame

7   itself, a second type image frame which is created by performing inter-

8   frame mono-directional prediction based on a past image frame and coding

9   a difference, and a third type image frame which is created by performing

10   inter-frame dual-directional prediction based on a past image frame and a

11   future image frame and coding differences, and the image data is coded so

12   that a head frame of each group may be the first type image frame, said

13   apparatus comprising:

14   an image encoder which codes each of frames of image data into

15   one of the first type image frame, the second type image frame, and the

16   third type image frame in accordance withing to said image coding

17   method;

18   an image decoder which decodes the image frame coded by said

19   image encoder; and

20   an image data analyzer which analyzes a picture header of a head

21   frame in the area to be edited and determines an attribute of each group,

22   and types of image frames included in each group,

23   wherein: in a case where said image data analyzer determines that a

24   head image frame which is arranged at a head of an editing target area

25   included in the image data coded by said image coding method is not the

26   first type image frame, said image decoder decodes the head image frame,

27   and each image frame appearing between the head image frame and the

28   first type image frame which appears first after the head image frame; and

29   said image encoder re-codes the image frames which are created by

30   said image decoder decoding the head image frame and each image frame

31   appearing between the head image frame and the first type image frame

32   which appears first after the head image frame, and at that time, re-codes

33   the head image frame into the first type image frame, and re-codes any of

34   the third type image frame appearing after the head image frame into an

35   image frame which is able to be decoded without referring to an image

36   frame arranged before the head image frame.

1   7 (Currently Amended). An image editing apparatus which edits image

2   data which has been coded in accordance with by an image coding method,

3   wherein a plurality of image frames constituting the image data are divided

4   into groups in order to manage the image data by the unit of each group,

5   each image frame is coded into one of a first type image frame which is

6   created by coding based only on data enclosed in the image frame itself, a

7   second type image frame which is created by performing inter-frame

8   mono-directional prediction based on a past image frame and coding a

9   difference, and a third type image frame which is created by performing

10   inter-frame dual-directional prediction based on a past image frame and a

11   future image frame and coding differences, and the image data is coded so

12   that a head frame of each group may be the first type image frame, said

13   apparatus comprising:

14   an image encoder which codes each of frames of image data into

15   one of the first type image frame, the second type image frame, and the

16   third type image frame in accordance withing to said image coding

17   method;

18   an image decoder which decodes the image frame coded by said

19   image encoder; and

20   an image data analyzer which determines an attribute of each

21   group, and types of image frames included in each group,

22   wherein: in a case where said image data analyzer determines that a

23   head image frame which is arranged at a head of an editing target area

24   included in the image data coded by said image coding method is not the

25   first type image frame, said image decoder decodes the head image frame,

26   and each image frame appearing between the head image frame and the

27   first type image frame which appears first after the head image frame; and

28   said image encoder re-codes the image frames which are created by

29   said image decoder decoding the head image frame and each image frame

30   appearing between the head image frame and the first type image frame

31   which appears first after the head image frame, and at that time, re-codes

32   the head image frame into the first type image frame, and re-codes any of

33   the third type image frame appearing after the head image frame into an

34   image frame which is able to be decoded without referring to an image

35   frame arranged before the head image frame; and ~~The image editing~~

36   ~~apparatus according to claim 6,~~ wherein:

37   in a case where said image data analyzer determines that the head

38   image frame of the editing target area is not the first type image frame,

39   the image decoder decodes any of ~~the~~ third type image ~~frame~~

40   frames that ~~appears~~ appear after ~~the~~ a first type image frame which appears

41   first after the head image frame if any of the third type image ~~frame~~ frames

42   is an image frame which is to be decoded by referring to an image frame

43   which is arranged before the first type image frame; and

44   said image encoder re-codes the image frame which is created by

45   said image decoder decoding any of the third type image frame that

46   appears after the first type image frame which appears first after the head

47   image frame.

1   8 (Original).   The image editing apparatus according to claim 6,

2   wherein when said image encoder re-codes the image frames which

3   are created by said image decoder decoding each frame appearing between

4   the head image frame and the first type image frame which appears first

5   after the head image frame, said image encoder re-codes any of the third

6   type image frame that appears after the head image frame into the third

7   type image frame that is able to be decoded without referring to an image

8   frame which is arranged before the head image frame.

1   9 (Original).   The image editing apparatus according to claim 6, wherein:

2   in a case where said image data analyzer determines that the head

3   image frame of the editing target area is the first type image frame, said

4   image decoder decodes any of the third type image frame that appears after

5   the head image frame; and

6   said image encoder re-codes the image frame which is created by

7   said image decoder decoding any of the third type image frame that

8   appears after the head image frame into an image frame which is able to be

9   decoded without referring to an image frame which is arranged before the

10   head image frame.

1   10 (Original). The image editing apparatus according to claim 6, wherein:

2   in a case where said image data analyzer determines that the head

3   image frame of the editing target area is the first type image frame, said

4   image decoder decodes any of the third type image frame that appears after

5   the head image frame; and

6   said image encoder re-codes the image frame which is created by

7   said image decoder decoding any of the third type image frame that

8   appears after the head image frame into the first type image frame.

1   11 (Original). The image editing apparatus according to claim 6, wherein:

2   in a case where said image data analyzer determines that the head

3   image frame of the editing target area is the first type image frame, said

4   image decoder decodes any of the third type image frame that appears after

5   the head image frame; and

6   said image encoder re-codes the image frame which is created by

7   said image decoder decoding any of the third type image frame that

8   appears after the head image frame into the third type image frame which

9   is able to be decoded without referring to an image frame which is

10   arranged before the head image frame.

1   12 (Original). The image editing apparatus according to claim 6, wherein

2   said image coding method is an MPEG method;

3   each of the groups is a GOP of MPEG;

4   the first type image frame is an I picture;

5   the second type image frame is a P picture; and

6   the third type image frame is a B picture.

1   13 (Currently Amended). An image editing apparatus which edits

2   image data which has been coded in accordance with by an image coding

3   method, wherein a plurality of image frames constituting the image data

4   are divided into groups in order to manage the image data by the unit of

5   each group, each image frame is coded into one of a first type image frame

6   which is created by coding based only on data enclosed in the image frame

7   itself, a second type image frame which is created by performing inter-

8   frame mono-directional prediction based on a past image frame and coding

9   a difference, and a third type image frame which is created by performing

10   inter-frame dual-directional prediction based on a past image frame and a

11   future image frame and coding differences, and the image data is coded so

12   that a head frame of each group may be the first type image frame, said

13   apparatus comprising:

14   an image encoder which codes each of frames of image data into

15   one of the first type image frame, the second type image frame, and the

16   third type image frame in accordance with said image coding method;

17   an image decoder which decodes the image frame coded by said

18   image encoder; and

19   an image data analyzer which <u>analyzes a picture header of a head</u>

20   <u>frame in the area to be edited and</u> determines an attribute of each group,

21   and types of image frames included in each group,

22   wherein: said image data analyzer determines whether a first

23   condition that the first type image frame which appears first in an editing

24   target area included in the image data coded in accordance with said image

25   coding method is a head image frame which is arranged at a head of a

26   group, and a second condition that the group is a closed group which is a

27   group that does not include the third type image frame which is to be

28   decoded by referring to an image frame included in a group which is

29   arranged before the group are satisfied or not;

30   in accordance with a result of said image data analyzer's

31   determining the first condition and the second condition, said image

32   decoder decodes any of the third type image frame that appears after the

33   first type image frame appearing first in the editing target area and that

34   needs to be re-coded; and

35   said image encoder re-codes the image frame which is created by

36   said image decoder decoding any of the third type image frame that

37   appears after the first type image frame which appears first in the editing

38   target area.

1   14 (Original). The image editing apparatus according to claim 13,

2   wherein:

3   in a case where said image data analyzer determines that one of the

4   first condition and the second condition is not satisfied, said image decoder

5   decodes any of the third type image frame that appears after the first type

6   image frame which appears first in the editing target area; and

7   said image encoder re-codes the image data which is created by

8   said image decoder decoding any of the third type image frame that

9   appears after the first type image frame which appears first in the editing

10   target area.

1   15 (Original). The image editing apparatus according to claim 13,

2   wherein:

3   in a case where said image data analyzer determines that the first

4   condition is satisfied and the second condition is not satisfied, said image

5   encoder re-codes the image frame which is created by said image decoder

6   decoding any of the third type image frame that appears after the first type

7   image frame which appears first in the editing target area into the first type

8   image frame .

1   16 (Original). The image editing apparatus according to claim 13,

2   wherein in a case where said image data analyzer determines that

3   the first condition is satisfied and the second condition is not satisfied, said

4   image encoder re-codes the image frame which is created by said image

5   decoder decoding any of the third type image frame that appears after the

6   first type image frame which appears first in the editing target area into the

7   third type image frame which is able to be decoded without referring to an

8   image frame which is arranged before the head image frame.

1   17 (Original). The image editing apparatus according to claim 13,

2   wherein in a case where said image data analyzer determines that

3   the first condition and the second condition are satisfied, said image

4   editing apparatus copies the image frame which is created by said image

5   decoder decoding any of the third type image frame that appears after the

6   first type image frame which appears first in the editing target area to the

7   image data after being edited.

1   18 (Original). The image editing apparatus according to claim 13, wherein

2   said image coding method is an MPEG method;

3   each of the groups is a GOP of MPEG;

4   the first type image frame is an I picture;

5   the second type image frame is a P picture; and

6   the third type image frame is a B picture.

1   19 (Original). An image editing method for editing image data which has

2   been coded in accordance with an image coding method, wherein which a

3   plurality of image frames constituting the image data are divided into

4   groups in order to manage the plurality of image frames by the unit of each

5   group, each image frame is coded into one of a first type image frame

6   which is created by coding based only on data enclosed in the image frame

7   itself, a second type image frame which is created by performing inter-

8   frame mono-directional prediction based on a past image frame and coding

9   a difference, and a third type image frame which is created by performing

10   inter-frame dual-directional prediction based on a past image frame and a

11   future image frame and coding differences, and the plurality of image

12   frames are coded so that a head frame of each group may be the first type

13   image frame, said image editing method comprising:

14   setting an editing target area in the image data which has been

15   coded in accordance with said image coding method;

16   determining whether a head group which is arranged at a head of

17   the editing target area is a closed group which is a group that does not

18   include the third type image frame which is to be decoded by referring to

19   an image frame included in a group which is arranged before the head

20   group; and

21   converting a portion near the head of the editing target area into the

22   closed group in a case where said determining determines that the head

23   group is not the closed group.

1   20 (Original). The image editing method according to claim 19, further

2   comprising:

3   determining whether any of the third type image frame included in

4   the head group of the editing target area is an image frame which is to be

5   decoded by referring to an image frame included in a group which is

6   arranged before the head group;

7   decoding any of the third type image frame determined as an image

8   frame which is to be decoded by referring to an image frame included in a

9   group which is arranged before the head group; and

10   coding any of the decoded third type image frame into an image

11   frame which is able to be decoded without referring to an image frame

12   included in a group which is arranged before the head group.

1   21 (Original). The image editing method according to claim 19, wherein

2   said image coding method is an MPEG method;

3   each of the groups is a GOP of MPEG;

4   the first type image frame is an I picture;

5   the second type image frame is a P picture; and

6   the third type image frame is a B picture.

1   22 (Original). An image editing method for editing image data which has

2   been coded in accordance with an MPEG method, said image editing

3   method comprising:

4   setting one or more editing target areas in the coded image data;

5   determining whether a head GOP which is arranged at a head of

6   each of the one or more editing target areas is a closed GOP;

7   determining a picture type of a head image frame which is arranged

8   at the head of each editing target area;

9   detecting a GOP which needs to be re-coded, and an image frame

10   which is included in the GOP and needs to be re-coded in accordance with

11   a result of said determining whether a head GOP of each editing target area

12   is a closed GOP, and a result of said determining a picture type of a head

13   image frame of each editing target area; and

14   re-coding the detected image frame which needs to be re-coded,

15   after it is decoded.

1   23 (Original). The image editing method according to claim 22, further

2   comprising:

3   determining a picture type of a next image frame which is arranged

4   next to the head image frame of each editing target area, in a case where

5   said determining whether a head GOP is a closed GOP determines that the

6   head GOP of each editing target area is not a closed GOP;

7   decoding the next image frame and following image frames which

8   are B pictures, in a case where said determining a picture type of a next

9   image frame determines that the next image frame is a B picture, and

10   following image frames which are B pictures, after decoding an image

11   frame which is an I picture which is encountered first when going back in a

12   reverse direction from the head image frame, each image frame between

13   the encountered image frame and the head image frame, and the head

14   image frame;

15   re-coding each decoded image frame, and re-coding the image

16   frames which are created by decoding the following image frames which

17   are B pictures into image frames which are able to be decoded without

18   referring to an image frame which is arranged before the head image

19   frame; and

20   recording each of the image frames which are created by re-coding

21   the head image frame and the following image frames which are B pictures

22   after those image frame are decoded.

1   24 (Original). The image editing method according to claim 22, further

2   comprising:

3   decoding the head image frame of each editing target area in a case

4   where said determining a picture type of a head image frame determines

5   that the head image frame is a P picture, and also decoding each image

6   frame appearing after the head image frame and before an image frame

7   which is an I picture which appears first after the head image frame; and

8   re-coding the image frames which are created by decoding the head

9   image frame and each image frame appearing after the head image frame,

10   and re-coding the image frame which is created by decoding the head

11   image frame into an image frame which is an I picture.

1   25 (Original). The image editing method according to claim 22, further

2   comprising:

3   expanding the image frame which needs to be re-coded by

4   decoding:

5   creating a new GOP by re-coding the image frame which is

6   decoded by said expanding; and

7   concatenating the one or more editing target areas.

1   26 (Original). An image editing method for editing image data which has

2   been coded in accordance with an image coding method, wherein a

3   plurality of image frames constituting the image data are divided into

4   groups in order to manage the image data by the unit of each group, each

5   image frame is coded into one of a first type image frame which is created

6   by coding based only on data enclosed in the image frame itself, a second

7   type image frame which is created by performing inter-frame mono-

8   directional prediction based on a past image frame and coding a difference,

9   and a third type image frame which is created by performing inter-frame

10   dual-directional prediction based on a past image frame and a future image

11   frame and coding differences, and the image data is coded so that a head

12   frame of each group may be the first type image frame, said image editing

13   method comprising:

14   setting an editing target area in the image data which has been

15   coded in accordance with said image coding method;

16   determining a type of a head image frame which is arranged at a

17   head of the editing target area;

18   decoding the head image frame of the editing target area and each

19 image frame appearing between the head image frame and the first type

20 image frame which appears first after the head image frame, in a case

21 where said determining a type determines that the head image frame is not

22 the first type image frame; and

23 re-coding the image frames created by decoding the head image

24 frame and each image frame appearing between the head image frame and

25 the first type image frame which appears first after the head image frame,

26 and re-coding the head image frame into the first type image frame, and re-

27 coding any of the third type image frame that appears after the head image

28 frame into an image frame which is able to be decoded without referring to

29 an image frame which is arranged before the head image frame.

1 27 (Currently Amended). An image editing method for editing image data

2 which has been coded in accordance with an image coding method,

3 wherein a plurality of image frames constituting the image data are divided

4 into groups in order to manage the image data by the unit of each group,

5 each image frame is coded into one of a first type image frame which is

6 created by coding based only on data enclosed in the image frame itself, a

7 second type image frame which is created by performing inter-frame

8 mono-directional prediction based on a past image frame and coding a

9 difference, and a third type image frame which is created by performing

10 inter-frame dual-directional prediction based on a past image frame and a

11 future image frame and coding differences, and the image data is coded so

12 that a head frame of each group may be the first type image frame, said

13 image editing method comprising:

14 setting an editing target area in the image data which has been

15 coded in accordance with said image coding method;

16 determining a type of a head image frame which is arranged at a

17 head of the editing target area;

18 decoding the head image frame of the editing target area and each

19 image frame appearing between the head image frame and the first type

20 image frame which appears first after the head image frame, in a case

21 where said determining a type determines that the head image frame is not

22 the first type image frame;

23   re-coding the image frames created by decoding the head image

24 frame and each image frame appearing between the head image frame and

25 the first type image frame which appears first after the head image frame,

26 and re-coding the head image frame into the first type image frame, and re-

27 coding any of the third type image frame that appears after the head image

28 frame into an image frame which is able to be decoded without referring to

29 an image frame which is arranged before the head image frame;

30   ~~The image editing method according to claim 26, further~~

31 ~~comprising:~~

32   decoding any of ~~the~~ third type image ~~frame~~ frames that ~~appears~~

33 appear after the first type image frame which appears first after the head

34 image frame ~~if~~ provided that any of the third type image ~~frame~~ frames is

35 an image frame which is to be decoded by referring to an image frame

36 which is arranged before the first type image frame, in a case where said

37 determining a type determines that the head image frame of the editing

38 target area is not the first type image frame; and

39   re-coding the image frame which is created by decoding any of the

40 third type image frame that appears after the first type image frame which

41 appears first after the head image frame.

1 28 (Original). The image editing method according to claim 26, further

2 comprising

3   re-coding the image frames created by decoding the head image

4 frame and each image frame appearing between the head image frame and

5 the first type image frame which appears first after the head image frame,

6 and re-coding any of the third type image frame that appears after the head

7   image frame into the third type image frame which is able to be decoded

8   without referring to an image frame which is arranged before the head

9   image frame.

1   29 (Original). The image editing method according to claim 26, further

2   comprising:

3   decoding any of the third type image frame that appears after the

4   head image frame of the editing target area in a case where said

5   determining a type determines that the head image frame is the first type

6   image frame; and

7   re-coding the image frame which is created by decoding any of the

8   third type image frame that appears after the head image frame into an

9   image frame which is able to be decoded without referring to an image

10   frame which is arranged before the head image frame.

1   30 (Original). The image editing method according to claim 26, further

2   comprising:

3   decoding any of the third type image frame that appears after the

4   head image frame of the editing target area in a case where said

5   determining a type determines that the head image frame is the first type

6   image frame; and

7   re-coding the image frame which is created by decoding any of the

8   third type image frame that appears after the head image frame into the

9   first type image frame.

1   31 (Original). The image editing method according to claim 26, further

2   comprising:

3   decoding any of the third type image frame that appears after the

4   head image frame of the editing target area in a case where said

5   determining a type determines that the head image frame is the first type

6 image frame; and

7   re-coding the image frame which is created by decoding any of the

8 third type image frame that appears after the head image frame into the

9 third type image frame which is able to be decoded without referring to an

10 image frame which is arranged before the head image frame.

1 32 (Original). The image editing method according to claim 26, wherein:

2   said image coding method is an MPEG method;

3   each of the groups is a GOP of MPEG;

4   the first type image frame is an I picture;

5   the second type image frame is a P picture; and

6   the third type image frame is a B picture.

1 33 (Original). An image editing method for editing image data which has

2 been coded in accordance with an image coding method, wherein which a

3 plurality of image frames constituting the image data are divided into

4 groups in order to manage the image data by the unit of each group, each

5 image frame is coded into one of a first type image frame which is created

6 by coding based only on data enclosed in the image frame itself, a second

7 type image frame which is created by performing inter-frame mono-

8 directional prediction based on a past image frame and coding a difference,

9 and a third type image frame which is created by performing inter-frame

10 dual-directional prediction based on a past image frame and a future image

11 frame and coding differences, and the image data is coded so that a head

12 frame of each group may be the first type image frame, said image editing

13 method comprising:

14   setting an editing target area in the image data which has been

15 coded in accordance with said image coding method;

16   determining whether a first condition that the first type image

17 frame which appears first in the editing target area is a head image frame

18   which is arranged at a head of a group and a second condition that the

19   group is a closed group which is a group that does not include the third

20   type image frame which is to be decoded by referring to an image frame

21   included in a group which is arranged before the group are satisfied or not;

22   decoding any of the third type image frame that appears after the

23   first type image frame which appears first in the editing target area and that

24   needs to be re-coded, in accordance with a result of determining the first

25   condition and the second condition; and

26   re-coding the image frame which is created by decoding any of the

27   third type image frame that appears after the first type image frame which

28   appears first in the editing target area.

1   34 (Original). The image editing method according to claim 33, further

2   comprising:

3   decoding any of the third type image frame that appears after the

4   first type image frame which appears first in the editing target area, in a

5   case where said determining determines that one of the first condition and

6   the second condition is not satisfied; and

7   re-coding the image frame which is created by decoding any of the

8   third type image frame that appears after the first type image frame which

9   appears first in the editing target area.

1   35 (Original). The image editing method according to claim 33, further

2   comprising

3   re-coding the image frame which is created by decoding any of the

4   third type image frame that appears after the first type image fame which

5   appears first in the editing target area into the first type image frame, in a

6   case where said determining determines that the first condition is satisfied,

7   and the second condition is not satisfied.

1   36 (Original). The image editing method according to claim 33, further

2   comprising

3   re-coding the image frame which is created by decoding any of the

4   third type image frame that appears after the first type image fame which

5   appears first in the editing target area into the third type image frame

6   which is able to be decoded without referring to an image frame which is

7   arranged before the head image frame, in a case where said determining

8   determines that the first condition is satisfied, and the second condition is

9   not satisfied.

1   37 (Original). The image editing method according to claim 33, further

2   comprising

3   copying the image frame which is created by decoding any of the

4   third type image frame that appears after the first type image frame which

5   appears first in the editing target area to the image data after being edited,

6   in a case where said determining determines that the first condition and the

7   second condition are satisfied.

1   38 (Currently amended).

2   An image editing method for editing image data which has been coded in

3   accordance with an image coding method, wherein which a plurality of

4   image frames constituting the image data are divided into groups in order

5   to manage the image data by the unit of each group, each image frame is

6   coded into one of a first type image frame which is created by coding

7   based only on data enclosed in the image frame itself, a second type image

8   frame which is created by performing inter-frame mono-directional

9   prediction based on a past image frame and coding a difference, and a third

10   type image frame which is created by performing inter-frame dual-

11   directional prediction based on a past image frame and a future image

12   frame and coding differences, and the image data is coded so that a head

13   frame of each group may be the first type image frame, said image editing

14   method comprising:

15   setting an editing target area in the image data which has been

16   coded in accordance with said image coding method;

17   determining whether a first condition that the first type image

18   frame which appears first in the editing target area is a head image frame

19   which is arranged at a head of a group and a second condition that the

20   group is a closed group which is a group that does not include the third

21   type image frame which is to be decoded by referring to an image frame

22   included in a group which is arranged before the group are satisfied or not;

23   decoding any of the third type image frame that appears after the

24   first type image frame which appears first in the editing target area and that

25   needs to be re-coded, in accordance with a result of determining the first

26   condition and the second condition;

27   re-coding the image frame which is created by decoding any of the

28   third type image frame that appears after the first type image frame which

29   appears first in the editing target area; and

30   ~~The image editing method according to claim 33, further~~

31   ~~comprising~~

32   inserting a first or second type image frame which appears

33   immediately before a head image frame which is arranged at the head of

34   the editing target area into the head of the editing target area, in a case

35   where the head image frame is the third type image frame.

1   39 (Original). The image editing method according to claim 33, wherein:

2   said image coding method is an MPEG method;

3   each of the groups is a GOP of MPEG;

4   the first type image frame is an I picture;

5   the second type image frame is a P picture; and

6   the third type image frame is a B picture.

1   40 (New). An image editing apparatus which edits image data which has

2   been coded in accordance with an image coding method, wherein a

3   plurality of image frames constituting the image data are divided into

4   groups, each image frame is coded into one of a first type image frame

5   which is created by coding data in the image frame, a second type image

6   frame which is created by performing inter-frame mono-directional

7   prediction based on a past image frame and coding a difference obtained

8   by the prediction, and a third type image frame which is created by

9   performing inter-frame dual directional prediction based on a past image

10   frame and a future image frame and coding differences obtained by the

11   prediction, and the plurality of image frames are coded so that a head

12   frame of each group may be the first type image frame, said apparatus

13   comprising:

14   an image coder which codes each of frames of image data into one

15   of the first type image frame, the second type image frame, and the third

16   type image frame;

17   an image decoder which decodes the image frame coded by the

18   image coder; and

19   an image data analyzer which detects a head group which is

20   arranged at a head of an editing target area included in the image data and

21   determines types of image frames included in each group,

22   wherein: said image data analyzer determines whether or not the

23   head group which is arranged at a head of the editing target area included

24   in the image data is a closed group which does not include the third type

25   image frame which is to be decoded by referring to an image frame

26   included in a group which is arranged before the head group; and

27   in a case where said image data analyzer determined the head group

28   is not the closed group which does not include the third type image frame,

29   said image coder converts a portion near the head of the editing target area

30   into the closed group.

1   41 (New).   An image editing apparatus which edits image data which

2   has been coded in accordance with an MPEG method, said apparatus

3   comprising:

4   image data analyzing means for analyzing a structure of image

5   frames included in each GOP of the image data, and determining an

6   attribute of each GOP and picture types of image frames included in each

7   GOP;

8   conversion point detecting means for detecting a GOP which needs

9   to be re-coded from an editing target area of the image data, and an image

10   frame which needs to be re-coded from the detected GOP;

11   image decoding means for decoding the image frame which needs

12   to be re-coded detected by said conversion point detecting means;

13   GOP converting means for creating a new GOP by re-coding the

14   image frame decoded by said image expanding means; and

15   image data concatenating means for concatenating a plurality of

16   image data which are cut out as editing target areas,

17   wherein: said image data analyzing means detects a head GOP

18   which is arranged at a head of the editing target area and determines

19   whether or not the head GOP which is arranged at the head of the editing

20   target area is a closed GOP; and

21   in a case where said image data analyzing means determines that

22   the head GOP of the editing target area is not a closed GOP, said GOP

23   converting means converts a portion near the head of the editing target area

24   into a closed GOP including no B picture.